

### REMARKS

The Applicant acknowledges the allowance of claims 25 and 37-45.

The above amendments to claims 19 and 26 insert the step of "exposing the hybridized oligonucleotide to two or more wash temperatures at or above the oligonucleotide's calculated or experimentally determined  $T_m$ ." Competitors are put on notice that inserting this step does not affect the available equivalents to the steps of selecting an oligonucleotide, hybridizing the oligonucleotide and determining the presence or absence of hybridized nucleic acid.

These claims are also amended to include oligonucleotide's having a sequence from a DNA operon. Support for this amendment is found in original claim 1 and on page 7, lines 2-3.

### Drawings

Formal drawings have been submitted as required and they have been deleted from the body of the specification as indicated above.

### Rejection Under 35 USC § 102(e)

A petition to revive Copending application S.N. 09/027,439 has been filed and granted such that the reasons for finding the rejection under 35 USC § 102(e) moot no longer apply. Applicant notes that both the present application and the co-pending application claim priority to the same provisional application. This limits the prior art effect of copending application Serial No. 09/027,439 against this application.

### Rejection Under 35 USC § 103

The examiner acknowledges that the newly cited references do not teach using the probes of the instant invention. Applicant maintains this distinction is sufficient to render the methods claimed herein unobvious. Whether obvious methods are used to construct the probes is irrelevant. There is no showing or suggestion in the art that

oligonucleotides which discriminate between species by the use of two or more wash temperatures, at least one of which is above the oligonucleotide's calculated or experimentally determined  $T_m$ , can be used to discriminate between species of Shigella and E. coli or for discriminating among species of Shigella and E. coli. Claims 19, 23, 24 and 25 are therefore, unobvious.

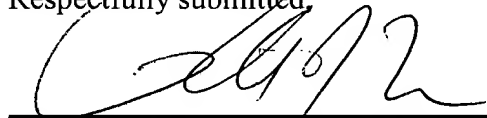
Rejection Under 35 USC § 112

The language referred to in Paper No. 15, page 5 last paragraph, which states, "the invention of Portugal teaches that duplexes formed from oligonucleotides should be washed at temperatures that are either at the  $T_m$  or above it." was not used in the context of summarizing or characterizing all embodiments of the invention at issue. On page 11 of the specification, methods which employ two wash temperatures relative to the  $T_m$  are said only to be preferred. The use of certain oligonucleotides to discriminate between species of Shigella and E. coli or for discriminating among species of Shigella and E. coli, under any hybridizing conditions, is considered part of the invention. For example, new method claims 48 and 49, which require the use of novel oligonucleotides and kits, do not require such wash temperatures. Therefore, a washing step at these temperatures is not essential and claims 19-24 and 26-35 need not recite a washing step to satisfy 35 USC § 112, second paragraph.

Claims 19 and 26 have been amended to pursue preferred embodiments.

Based on the above remarks, applicant submits that all pending claims are in a form suitable for allowance and patentable over the cited references. Therefore, withdrawal of the rejections and the allowance these claims are earnestly solicited.

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION**

Last paragraph at page 5 has been amended as follows:

--Figure 1 is an illustration of the ribosomal RNA operon on the E. coli chromosome. Each line marks the relative positions of one of the seven rrn operons found on the E. coli chromosome. Figure 2 is an illustration of a ribosomal RNA operon.--

First paragraph at page 6 has been amended as follows:

**IN THE CLAIMS:**

*Claims 19, 26, 28 and 29 have been amended as follows:*

19. (Twice Amended) A method for discriminating between species of Shigella and E. coli or for discriminating among species of Shigella and E. coli in a sample containing organisms of one or more taxonomic groups comprising:
- a. selecting an oligonucleotide having a sequence from a DNA or RNA operon, wherein the sequence differs by one or more bases from at least one of the operons from the two or more species being discriminated, and wherein the oligonucleotide discriminates between species after hybridization by the use of two or more wash temperatures, at least one of which is above the oligonucleotide's calculated or experimentally determined  $T_m$ ;
  - b. hybridizing the oligonucleotide to nucleic acid from the sample; and
  - c. exposing the hybridized oligonucleotide to two or more wash temperatures, at least one of which is above the oligonucleotide's calculated or experimentally determined  $T_m$ ; and
  - d. determining the presence or absence of ~~hybridizing~~ hybridized nucleic acid.

26. (Twice Amended) A method for discriminating between species of Shigella and E. coli or for discriminating among species of Shigella and E. coli in a sample containing organisms of one or more taxonomic groups comprising:

- a. selecting an oligonucleotide having a sequence from a DNA or RNA operon, wherein the sequence differs by one or more bases from at least one of the operons from the two or more species being discriminated, and wherein the oligonucleotide discriminates between species after hybridization by the use of two or more wash temperatures at or above the oligonucleotide's calculated or experimentally determined  $T_m$ ;
- b. hybridizing the oligonucleotide to nucleic acid from the sample; ~~and~~
- c. exposing the hybridized oligonucleotide to two or more wash temperatures at or above the oligonucleotide's calculated or experimentally determined  $T_m$ ; and
- d. determining the presence or absence of hybridizing nucleic acid, wherein said oligonucleotide comprises a sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3 and SEQ ID NO: 4.

28. (Amended) The method of claim 26 48, wherein an oligonucleotide consisting of SEQ ID NO: 2 is used to discriminate between or among Shigella and Escherichia.

29. (Amended) The method of claim 26 48, wherein an oligonucleotide consisting of SEQ ID NO: 3 is used to discriminate between or among Shigella and Escherichia.

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